

TIRC Grant #157

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Effect of Tobacco Tar on
Respiratory Tract of the Duck

We have been interested in the past year in developing the respiratory tract as a specific system to study experimental cancer. This work, of course, has been carried out in the white Pekin duck. I feel that we have accomplished a good deal during the past year in developing some technique for this study.

We now are able to put 50 to 100 cc. of solution into the respiratory tract of the duck without encountering any difficulty. This means that we can put a large amount of a carcinogenic agent down into the respiratory tract. It has required considerable time and effort to work out the normal respiratory tract in the duck and to find out what happens to liquids and particulate material when put into the respiratory tract. We have been able to demonstrate that sodium fluorescein will go immediately from the respiratory tract into the circulating blood; however, we cannot demonstrate methylcholanthrene in the liver and intestines forty-eight hours after we put approximately 250 mgs. of it into the respiratory tract although it is still present in the lungs and air sacs. This technique will enable us to compare the response of the respiratory tract to that of the skin. We do have ducks in which we put smaller amounts of methylcholanthrene into the respiratory tract. These have been under observation for almost a year and, as far as we know, none have developed tumors. Using this approach I think we can learn something of the elimination of chemicals from the respiratory tract. Such may throw some light on the problem of chemicals in the respiratory tract and their effects. This approach will enable us to use many other agents in large quantities in the respiratory tract, a technique which has not been used previously.

We have two manuscripts based upon the foregoing just about ready for publication.

As you may recall, we put tobacco tar into the respiratory tract of a small number of ducks for a period of about three months. Six or eight months later we sacrificed some of these birds but did not find anything of interest in the lungs other than some pigment in the lymphoid tissue. I have not observed any cellular changes or anything to suggest a neoplasm. We have three or four of this group of ducks still under observation. It is now about a year and a half since this tobacco tar experiment was started. I expect to sacrifice these birds and examine them within the next three or four months.

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I think it would be advisable to study the effects of chemicals on the respiratory tract of ducks and in this group to use some tobacco tar. The only problem that presents itself at this time is that the presence of nicotine in the tobacco tar may prove injurious to the ducks. I base this upon our other studies with tobacco tar. If there is any known way in which the tobacco tar can be treated to remove the nicotine, then the residue could be put into the respiratory tract in large amounts. I believe such a study would be advantageous in pursuit of this problem.

We will be able to complete some of the studies that we have been making over the past two years within the next six months as far as I see it now. I hope the Tobacco Industry Research Committee will be able to continue their assistance to me, enabling us to develop some of the basic problems in the field of carcinogenesis and lung lesions. I will be happy to receive an application form for a grant for the coming year.

You may be interested in knowing that the paper that Mrs. Kirchoff and myself worked on for a long time, correlating the smoking habits of different individuals with different disease processes, will be published in Texas Reports within the next month or six weeks. The review of cancer of the lung from 1900 to 1930 has been accepted by Surgery, Gynecology and Obstetrics for publication.

Mrs. Kirchoff is working on the problem of compiling all available information on cancer of the lung referable to frequency and the frequency in the male and female; the latter, as everyone knows, is in a state of confusion. We are hoping that we can at least pull all of this data together in order that it can be better evaluated. We are still working on our references on lung cancer. I have not approached the American Cancer Society yet for some aid on this study. The reason I haven't is that we are snowed under with our other studies at the moment.

Please excuse this long discussion, but I did want to let the Tobacco Industry Research Committee know what we are doing in order that they can evaluate our problem and see if they are in a position to continue assistance to us.

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